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(56) Documents Cited

GB 2331980 A US 3421656 A

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(54) Abstract Title

Stackable/nestable containers

(57) A container 10 comprises support means 12 mounted with at least part of the means protruding from a side (18a, 18b) of the container when in a stacking position, upon which a second container may be rested. When the support means 12 is in a nesting position, a like container 110 can be nested inside, the container 10 being formed to receive the support means 112 of the like container, to enable the support means 112 to adopt or remain in the stacking position. The support means 112 may be received by the container 10 upon application of pressure, e.g. by placing a further like container on the like container 110. The support means 112 may be received by a slot 36 formed through a container side wall (18a, 18b), and the slot may be shaped to facilitate entry and/or removal of the support means 112; there may be provision for movement of the support means 12 from the stacking position during removal. The support means 12, 112 may be moveable between a plurality of stacking positions, and a nesting position. The support means 12, 112 may comprise a support member 20, 120 mounted by a mounting means 22, 122, arranged to transfer the weight of another container stacked above from a weak to a strong part of the container 10, 110. The container 10 may have a base 16 and upstanding walls 18a-d.

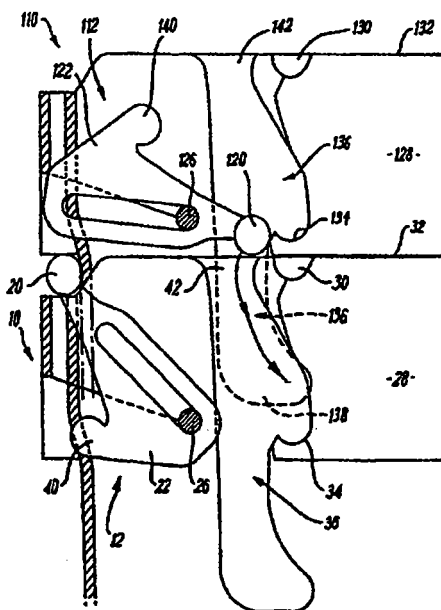


Fig. 5

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date but within the period prescribed by Rule 25(1) of the Patents Rules 1995.

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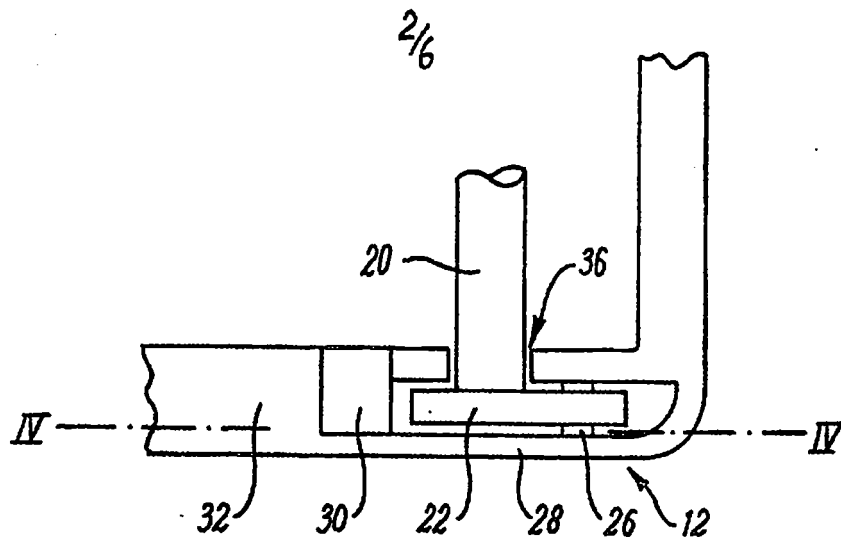


FIG. 2

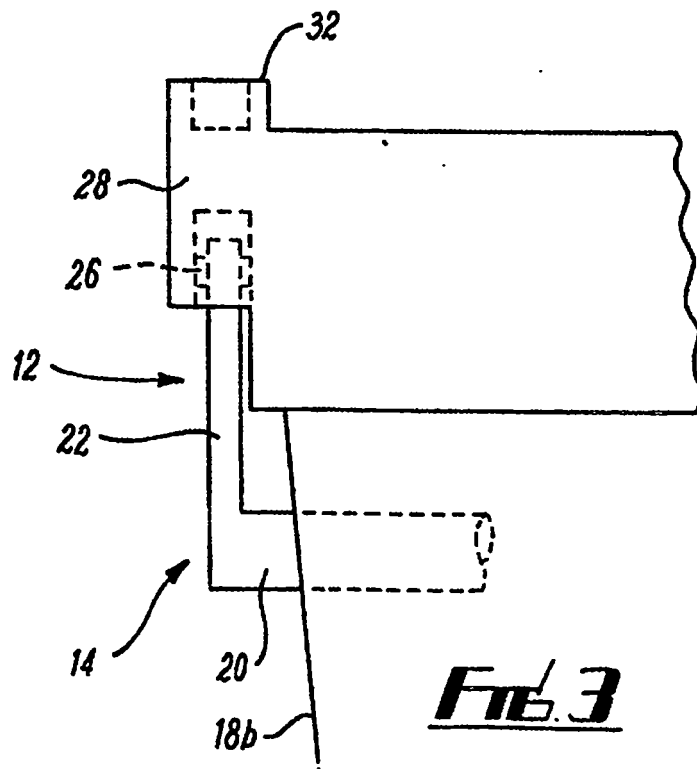
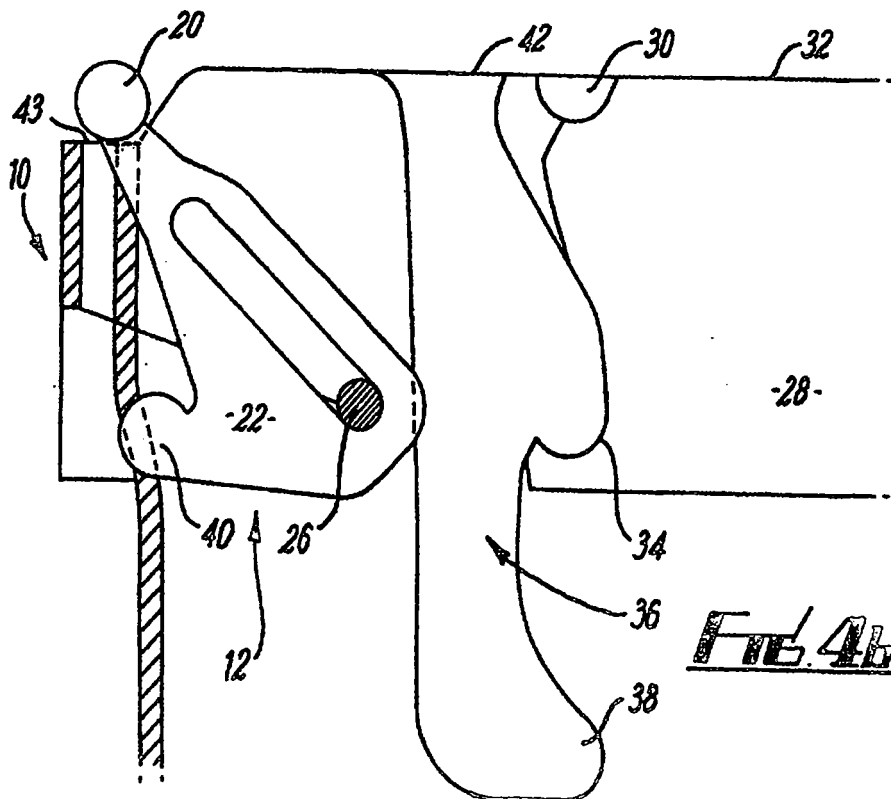
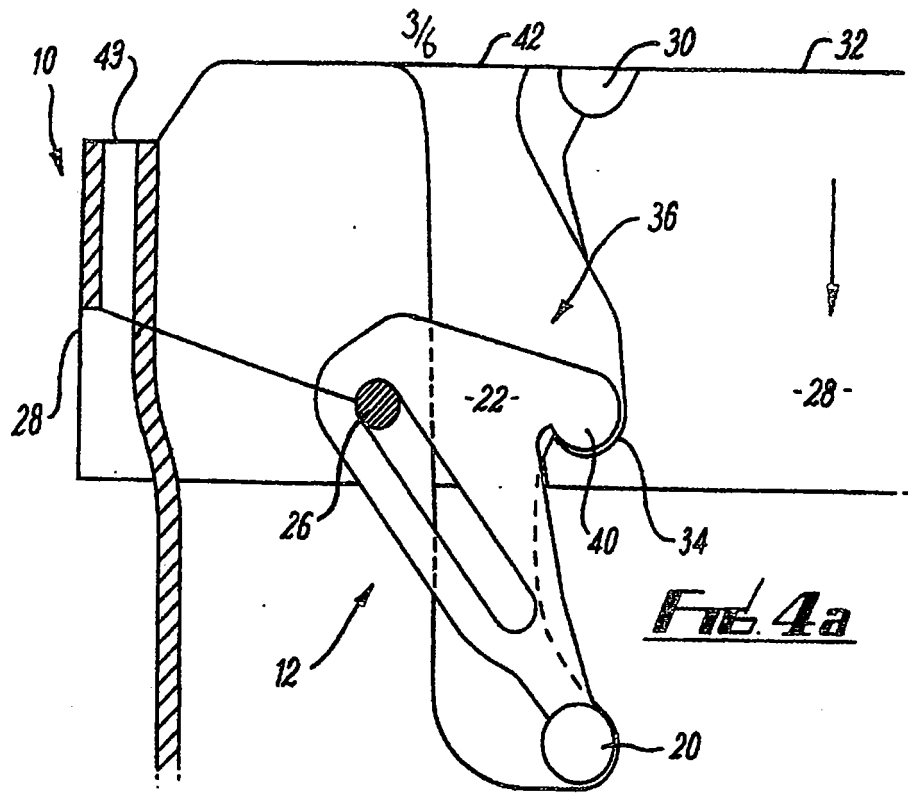
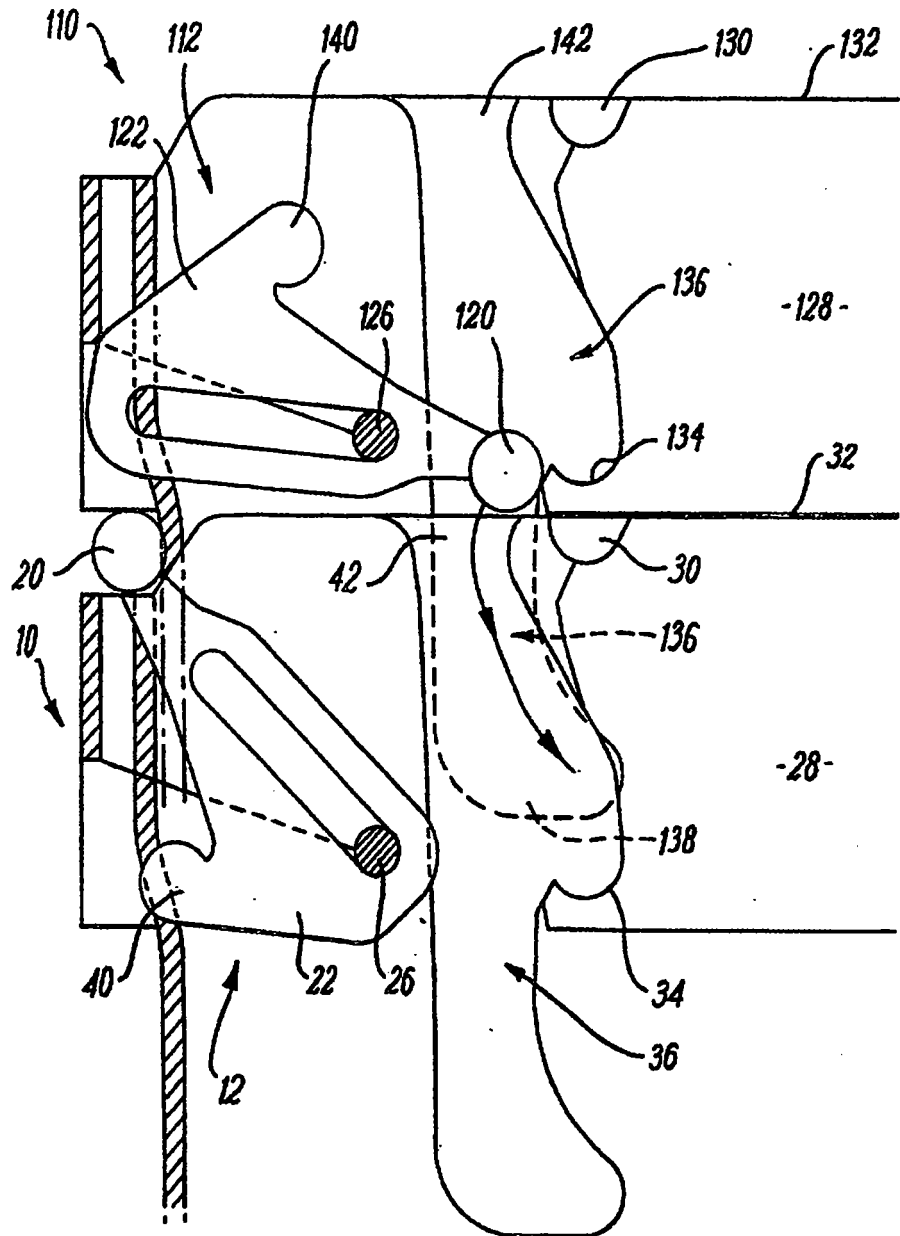


FIG. 3



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FTE.5

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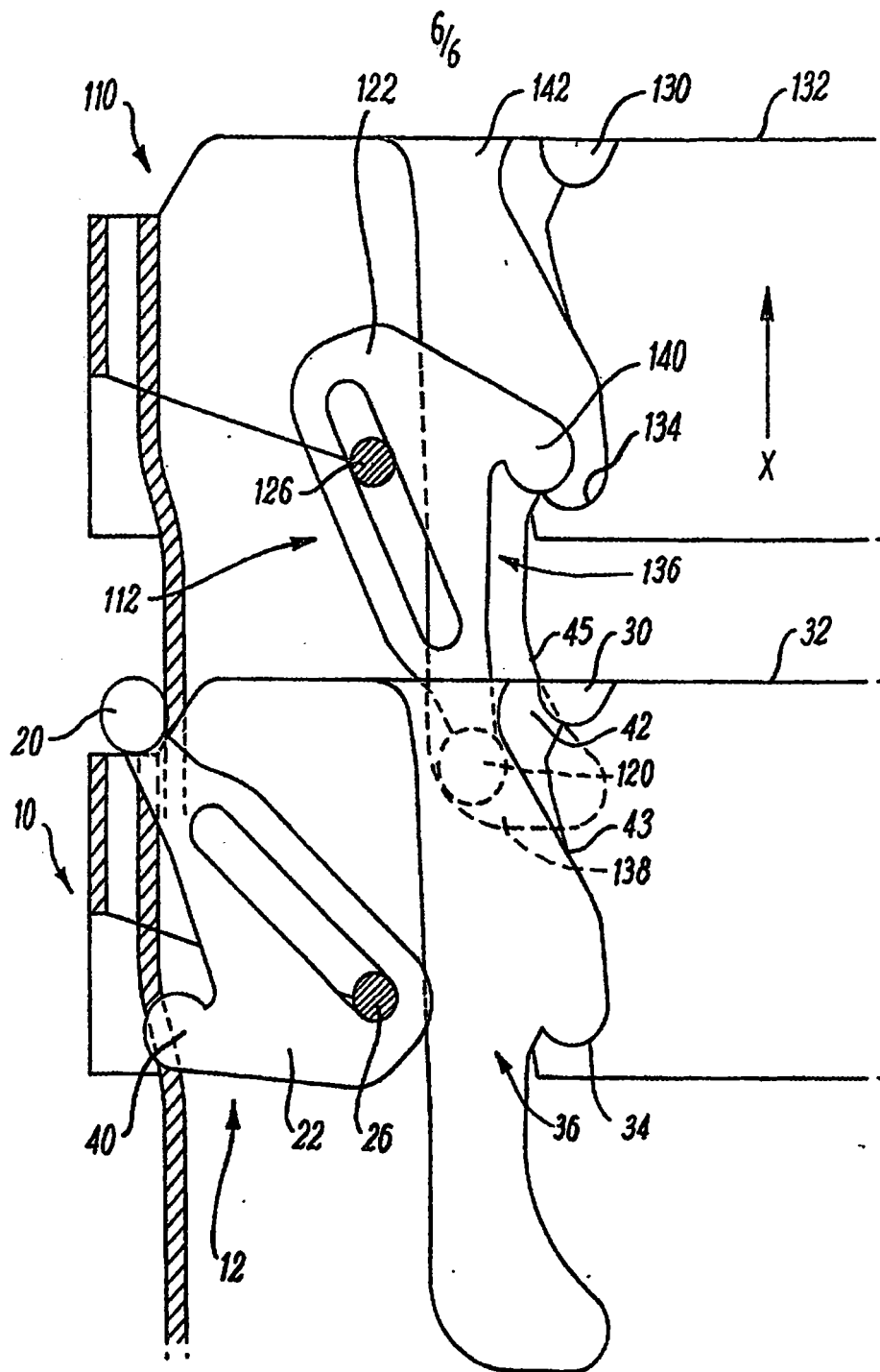


FIG. 7

Containers

The present invention relates to containers.

Conventional forms of stacking and nesting containers comprise two support bars (sometimes referred to as bail arms or stacking bars) which are each pivotally attached to and extend between the sides of the container, usually generally towards opposing ends of the container, and each of which is movable from a nesting position (in which a like container can nest from above) to one or more positions in which the support bars can support a second like container to form a stack.

Many of the known designs of containers have the support bars located wholly internally such that no portion or part thereof protrudes from the sides of the container, and therefore the support bars generally present no obstruction to the nesting of such like containers. However, it may be preferred or necessary for a part of the support bars to extend through the sides of the container. Containers with the arrangement described in U.K. patent application No. 9725564 can have the support bars extending through the sides of the container when in the lowest stacking position which is at a location which would usually be located within a container in which the said container is nested. Unfortunately, such an arrangement precludes or inhibits the nesting of such containers when the support bars are in the stacking position.

The arrangement disclosed in U.K. patent application No. 9725564 provides for the bars to move away from the lowest stacking position upon contact with a lower container. This movement allows nesting, but unfortunately however, precludes the upper container from providing support in the lowest stacking position, which is considered a serious disadvantage.

According to the present invention there is provided a container comprising support means mounted with at least part thereof protruding from

a side of the container when in a stacking position in which the support means can support a second container rested thereon, the container being formed to receive the protruding part of similar support means of a further container nested therein to enable the support means of the further container to adopt or remain in the stacking position.

Preferably the container is formed to receive the protruding part of similar support means upon the application of pressure on the similar support means, such pressure desirably being applicable by the placement of a still further container on the further container. Preferably the container comprises a slot which receives the protruding part of a similar support means and which slot may open to a top edge of a side of the container. Preferably the slot is formed at least in part through a side of the container. The slot may be shaped at its opening to facilitate entry of support means therein.

Preferably the container is formed to receive support means of a similar container nested therein, which support means may extend through a side of the container and the similar container when the containers are nested.

Preferably the slot is formed to facilitate selective removal of the further container from nesting within the container. The slot may provide for movement of the similar support means from the stacking position, desirably during removal. The slot may act to guide the similar support means toward the opening.

Preferably the slot is shaped around the location of the stacking position to provide for movement of the support means generally transversely of the direction of movement of the further container from nesting whereby to facilitate removal of the further container and the further support means from the container. The slot may be shaped to guide the similar support means in the transverse direction and toward the opening as the further container is removed from nesting within the said container.

The support means may be arranged to provide a plurality of stacking positions, desirably all of which are attainable and/or sustainable when the container is nested in a like container. The support means is desirably locatable in a nesting position to enable a further similar container to be nested therein.

Preferably the support means comprises a support member mounted by mounting means which means is so formed and arranged as to transfer the weight of a container stacked thereon from the support member bearing on a region of relative weakness in the container to a position of relative strength whereat the container is better able to bear the load.

Preferably the container comprises a base and upwardly extending side walls. The mounting means may transfer load to a position on the side of the container, preferably at a different height to the stacking position. Preferably the said position is above the stacking position.

Preferably the side walls have a strengthened region, the weight being transferred to a position within or above the strengthened region. The strengthened region is preferably the upper part and desirably the rim of the side walls which may also provide a nesting stop to limit downward movement of a further container into the container when nesting.

Preferably the support means may be movable between a plurality of stacking positions to support a further container at respective heights above the base, the mounting means transferring load as aforesaid at least when the support means is the lowermost of the stacking positions. The mounting means preferably transfers weight to a formation which defines another stacking position. The formation may comprise a ledge on which a portion of the mounting means or support member may rest when in the corresponding stacking position, and on which an alternative portion may rest when in a different stacking position, to transfer load as aforesaid.

An embodiment of the present invention will now be described by way of example only, with reference to the accompanying drawings, in which:-

Fig. 1 is a diagrammatic perspective view of a container according to the present invention;

Fig. 2 is a plan view of a corner of the container in the direction II of Fig. 1;

Fig. 3 is a partial view of a corner of the container in the direction III of Fig. 1;

Fig. 4a is a highly schematic cross sectional end view of support means of a container according to the present invention viewed generally along the line IV - IV of Fig. 2 with the support means in a lowermost stacking position;

Fig. 4b is a similar view to Fig. 4a, with the support means in a nesting position; and

Figs. 5, 6 and 7 are highly schematic sequential representations of the interaction of two similar containers according to the present invention during nesting and removal from nesting.

Referring to the drawings and in particular Fig. 1, there is shown a container 10 comprising support means 12 mounted with at least part 14 thereof protruding from a side of the container 10 when in a stacking position in which the support means 12 can support a second container rested thereon, the container 10 being formed to accommodate the protruding part 14 of similar support means of a further container nested therein to enable the support means of the further container to adopt or remain in the stacking position.

In more detail, the container 10 comprises a base 16 and four upwardly extending sides 18a, 18b, 18c and 18d.

Two support means 12 are provided, generally at opposing ends of the container 10 and each of which extends between opposing sides 18a, 18b. Each support means 12 comprises an elongate bar 20 which extends across the

container with plates 22 at each end, which plates 22 each have a slot 24 in which a pin 26 is located. The pin 26 is formed integrally with, or is attached to the respective sides 18a, 18b and has an oversized head (not shown) to retain the pin 26 in the slot 24. The pin 26 is located between an outer lip 28 extending around the upper rim of each of the four sides 18a, 18b, 18c and 18d. The pin 26 and the slot 24 allow the plate 22 to move relative to the sides 18a and 18b by sliding the slot 24 past the pin 26, or pivoting the plate 22 around the pin 26, or by a combination of these movements.

A ledge 30 is formed in the upper surface 32 of the walls 18a, 18b and has a slightly cupped upper surface on which the bar 20 may rest to be supported at the uppermost stacking position as illustrated in Fig. 1. In this uppermost stacking position another container, such as a similar container, can be stacked on the container 10 with the base of the similar container generally at the level of the mouth of the container 10.

A second ledge 34 is provided below the ledge 30 in each side 18a, 18b. Each ledge 34 is located between the outer lip 28 and the respective sides 18a, 18b. Manipulation of the bar 20 and hence the plate 22, by virtue of the pin and slot arrangement 24, 26, allows the bar 20 to be moved to a lower position in which the ledges 34 supports the respective bar 20, thereby providing a second stacking position beneath the uppermost stacking position described above.

The two stacking positions described above are both in the region of the outer lip 28 and the upper rim of the walls 18a, 18b, whereat the container 10 is relatively strong. This strength ensures that the support means 12 and the sides of the container 18a, 18b can support the weight of a stacked container, or a plurality of stacked containers whether loaded with contents or not.

The arrangement as shown also provides a lowermost stacking position (Fig. 3, Fig. 4a) whereat the bar 20 is located beneath the outer lip 28 in a relatively weak location in the side walls 18a, 18b. Manipulation of the slot and

pin arrangement 24, 26, enables location of the bar 20 at said lowermost position which is generally vertically below the aforesaid stacking positions the bar 20 would occupy when at the ledges 30 or 34. As can be seen in Fig. 3, the bar 20 extends through the side walls 18a, 18b by a part 14 thereof when in the lowermost stacking position. A slot 36 is formed down the respective sides 18a, 18b through which the bar 20 extends at each end and along which the bar 20 moves between the stacking and nesting position (Fig. 4b). The bar 20 can be moved down to the lowermost stacking position by appropriate manipulation of the slot and pin connection 24, 26. The bar 20 is then preferably vertically below the positions it would occupy when at the ledges 30, 34.

However, the bottom 38 of the slot is significantly below the strengthened rim area of the container in the region of the sides 18a, 18b which is normally of relatively light material. Therefore, it is preferable that the bottom 38 of the slot 36 does not bear the weight of a stacked container, at least to any significant degree, because this would result in a significant danger that the weight would cause the walls 18a, 18b to buckle, bow or distort, or possibly causing the walls 18a, 18b to be damaged or causing the bar 20 to become disengaged from the walls resulting in an unsafe stack.

The plates 22 therefore each carry a formation 40 which has a cross sectional size and shape similar to that of the bar 20. The formation 40 is positioned on the plate 22 so that as the bar 20 approaches the lower stacking position, i.e. the bottom 38 of the slot 36, the formation 40 will simultaneously approach the ledge 34 to rest thereon. The plate 22 has now reached the position shown in the Fig. 4a and is supported at least primarily if not wholly by the ledge 34 which is located in the strengthened region of the container.

Difficulties arise with known containers when a container 10 with the support bars 20 extending outwardly from the sides as in the case when the support bars 20 are in the lowermost stacking position described above, is nested or nesting is attempted in a like container.

Generally as the upper container is lowered on to a lower container for nesting, the part 14 of the bars 20 contacts the upper edge of the lower container. This interaction may prevent further insertion of the upper container into the lower container. Alternatively, the bar may be forced upward as the containers are nested, which results in the bar ledging on the upper edge of the lower container, unable to adopt a stacking position below the rim of the lower container.

Figs. 4a, 4b, 5 and 6 illustrate how a container 10 according to the present invention interacts with a like container 100 during nesting. The illustration shows interaction with an identical container, and the various features of the like container are given the same numerical references, prefixed with numeral '1'. It is to be appreciated that the container 10 may interact similarly with non-identical containers in accordance with this invention.

Each slot 36 open at the upper surface 32 with a mouth 42 shaped to enable the bar 20 of the like upper container 110 to be locatable in the slot 36 of the lower container 10, and to adopt the lower stacking position, as will be explained.

The bottom 38 of the slot 36 is shaped in a general boot shape to allow movement of the bar 20 generally in a transverse direction relative to the direction of movement X (Fig. 7) of withdrawal of a container 110 from the lower container 10 to facilitate removal of the upper container 110 from nesting, again as described in more detail below.

Referring to Fig. 4a, the container 10 is shown with the support means 12 in the lowermost stacking position with the formation 40 resting on the ledge 34 formed part way down the side of the slot 36. Fig. 4b shows the support means 12 in a nesting position whereat the bar 20 nests on an outer lip 43 of the container 10 such that the means 12 presents no obstruction to the nesting of a like container in the container 10. Fig. 5 shows a like upper container 110 of which the support means 112 is in the lowermost stacking position, nested

in the container 10. It can be seen that nesting has caused the support means 112 of the upper container 110 to move from the lower stacking position to an intermediate position in which the bar 120 is ledged against the side of the mouth 42 of the slot 36 of the container 10. The mouth 42 generally blends into the surface 32 such that light manual pressure, or the weight of a further container (not shown) stacked on the upper container 110 will cause the bar 120 of the upper container 110 to be pinched against the mouth 42 of the slot 36 of the lower container and pass into the slot 36 of the lower container 10 down to the bottom 138 of the slot 136 of the upper container, i.e. to adopt the lowermost stacking position.

Fig. 6 shows the support means 112 of the upper container 110 in the lowermost stacking position when the container 110 nested in the container 10. The sloped sides 43, 45 of the respective slots 36, 136 facilitate retention of the support means of the upper container in the lowermost stacking position.

The slots 36, 136 are shaped to enable ready removal of the upper container 110 from the lower container 10 when the means 112 are in the lowermost stacking position. The general enlarged boot shape of the bottom 138 of the slot 136 of the upper container allows movement of the bar 120 up the slope 43 of the slot 36 as the upper container 110 is withdrawn from the lower one, i.e. generally transverse of the direction of movement X of removal of the container 110 from the lower container 10 (Fig. 7). The slopes 36, 136 are shaped to provide space for the bar 120 to be lifted from the lower container 10 with only minimal movement of the bar 120 from the lowermost stacking position such that preferably upon removal the bar 120 will automatically assume the lowermost stacking position again.

It will be appreciated that whilst the above embodiment refers to a container with support means that provides for relocation of the load bearing positions on the walls of the container, the invention is applicable to any other arrangements wherein a part of the support means protrudes from the sides of the container to present obstacles or hindrances to the nesting of the container

with another container with a similar arrangement.

Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular emphasis has been placed thereon.

Claims

1. A container comprising support means mounted with at least part thereof protruding from a side of the container when in a stacking position in which the support means can support a second container rested thereon, the container being formed to receive the protruding part of similar support means of a further container nested therein to enable the support means of the further container to adopt or remain in the stacking position.
2. A container according to claim 1 wherein the container is formed to receive the protruding part of similar support means upon the application of pressure on the similar support means, such pressure desirably being applicable by the placement of a still further container on the further container.
3. A container according to claims 1 or 2 wherein the container comprises a slot which receives the protruding part of a similar support means and which slot opens to a top edge of a side of the container.
4. A container according to claim 3 wherein the slot is formed at least in part through a side of the container.
5. A container according to claim 3 wherein the slot is shaped at its opening to facilitate entry of support means therein.
6. A container according to any one of the preceding claims wherein the container is formed to receive support means of a similar container nested therein, which support means extend through a side of the container and the similar container when the containers are nested.
7. A container according to any one of claims 3 to 6 wherein the slot is formed to facilitate selective removal of the further container from nesting within the container.

8. A container according to any one of claims 3 to 7 wherein the slot provides for movement of the similar support means from the stacking position during removal.
9. A container according to claims 3 to 8 wherein the slot is arranged to act to guide the similar support means toward the opening.
10. A container according to any one of claims 3 to 9 wherein the slot is shaped around the location of the stacking position to provide for movement of the support means generally transversely of the direction of movement of the further container from nesting whereby to facilitate removal of the further container and the further support means from the container.
11. A container according to any one of claims 3 to 10 wherein the slot is shaped to guide the similar support means in the transverse direction and toward the opening as the further container is removed from nesting within the said container.
12. A container according to any one of the preceding claims wherein the support means is arranged to provide a plurality of stacking positions, desirably all of which are attainable when the container is nested in a like container.
13. A container according to any one of the preceding claims wherein the support means is desirably locatable in a nesting position to enable a further similar container to be nested therein.
14. A container according to any one of the preceding claims wherein the support means comprises a support member mounted by mounting means which means is so formed and arranged as to transfer the weight of a container stacked thereon from the support member bearing on a region of relative weakness in the container to a position of relative strength whereat the container is better able to bear the load.

15. A container according to any one of the preceding claims wherein the container comprises a base and upwardly extending side walls.

16. A container according to claims 14 or 15 wherein the mounting means is arranged to transfer load to a position on the side of the container, at a different height to the stacking position, the said position being above the stacking position.

17. A container according to any one of the preceding claims wherein the side walls of the container have a strengthened region, the weight being transferred to a position within or above the strengthened region, the strengthened region being the upper part and the rim of the side walls providing a nesting stop to limit downward movement of a further container into the container when nesting.

18. A container according to any one of the preceding claims wherein the support means are movable between a plurality of stacking positions to support a further container at respective heights above the base, the mounting means transferring load as aforesaid at least when the support means is the lowermost of the stacking positions.

19. A container according to claim 18 wherein the mounting means preferably is arranged to transfer weight to a formation which defines another stacking position.

20. A container according to claim 18 wherein the formation comprises a ledge on which a portion of the mounting means or support member rests when in the corresponding stacking position, and on which an alternative portion rests when in a different stacking position, to transfer load as aforesaid.

21. A container substantially as herein described with reference to the accompanying drawings.

22. Any novel subject matter or combination including novel subject matter disclosed herein, whether or not within the scope of or relating to the same invention as any of the preceding claims.



INVESTOR IN PEOPLE

Application No: GB 9910567.8

Examiner: Dr Fatema
Sardharwala

Claims searched: 1-21

Date of search: 21 September 2000

Patents Act 1977

Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:	
UK CI (Ed.R):	B8P (PU)
Int CI (Ed.7):	B65D 21/06
Other:	Online: EPODOC

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2331980 A (MCCCKEHNIE)	
A	US 3421656 (ASENBAUER)	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
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